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Abstract of th Discl sure

In an etching method for etching an etching target film formed on a substrate placed inside an airtight processing chamber 104 by inducing a processing gas into the processing chamber 104, the processing gas contains CF_4 , N_2 and Ar and the etching target film is constituted of an upper organic polysiloxane film and a lower inorganic SiO_2 film. The flow rate ratio of CF_4 and N_2 in the processing gas is essentially set within a range of $1 \leq (\text{N}_2 \text{ flow rate} / \text{CF}_4 \text{ flow rate}) \leq 4$. If $(\text{N}_2 \text{ flow rate} / \text{CF}_4 \text{ flow rate})$ is less than 1, an etching stop occurs and, as a result, deep etching is not achieved. If, on the other hand, $(\text{N}_2 \text{ flow rate} / \text{CF}_4 \text{ flow rate})$ is larger than 4, bowing tends to occur and, thus, a good etching shape is not achieved. Accordingly, the flow rate ratio of CF_4 and N_2 in the processing gas should be set essentially within a range of $1 \leq (\text{N}_2 \text{ flow rate} / \text{CF}_4 \text{ flow rate}) \leq 4$, to ensure that improvements in both the selection ratio and the etching shape are achieved.

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